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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,778	12/16/2003	Shinji Matsumoto	023971-0349	4068

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EXAMINER	
TRAN, DALENA	
ART UNIT	**PAPER NUMBER**
3661	

DATE MAILED: 03/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/735,778	MATSUMOTO ET AL.	
	Examiner	Art Unit	
	Dalena Tran	3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *6,11-16,18-22 and 24* is/are allowed.

6)☒ Claim(s) *1-5,7-10,17 and 23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/16/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Notice to Applicant(s)

1. This application has been examined. Claims 1-24 are pending.

2. The prior art submitted on 12/16/03 has been considered.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1,4-5,7-10,17, and 23, are rejected under 35 U.S.C.103(a) as being unpatentable over Murakami (6,702,717), in view of Leach et al. (6,409,287), and Matsuno (6,442,469).

As per claims 1 and 23, Murakami discloses a vehicle dynamics control apparatus comprising: sensors that detect at least a turning condition and a driving condition of a host vehicle (see at least columns 1-2, lines 29-27), an actuator that produces a yaw moment acting on the host vehicle (see at least columns 3-4, lines 65-37), a control unit configured to be electronically connected to the sensors and the actuator, for enabling vehicle dynamics control and lane deviation prevention control (see at least columns 8-9, lines 30-24), a driving stability decision section that determines a driving stability including a vehicle driveability and a vehicle stability, based on at least the turning condition (see at least columns 4-5, lines 38-37; and columms 15-16, lines 38-24). Murakami does not disclose a yawing motion control. However, Leach et al. disclose a yawing motion control section that controls a yawing motion of the host vehicle by producing the yaw moment corresponding to a final desired yaw moment and acting

in a direction that improves the driving stability when the driving stability is deteriorated, the final desired yaw moment being determined to be equal to a controlled variable of the lane deviation prevention control when the vehicle dynamics control is inoperative and determined to be equal to a controlled variable of the vehicle dynamics control when the vehicle dynamics control is operative (see at least columns 11-13, lines 43-3; and columns 13-15, lines 34-11). Murakami also does not disclose yaw moment. However, Matsuno discloses a lane deviation prevention section that determines based on the driving condition, a lane deviation tendency of the host vehicle from a driving lane, and executes the lane deviation prevention control by producing the yaw moment corresponding to the controlled variable of the lane deviation prevention control and acting in a direction that lane deviation is prevented (see at least columns 1-2, lines 46-2; column 8, lines 1-22; and columns 8-9, lines 63-67), and a driving stability decision compensation section that compensates for a decision of the driving stability based on the controlled variable of the lane deviation prevention control (see at least column 8, lines 23-62). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Murakami by combining a yawing motion control, and producing yaw moment for accurately detecting vehicle deviation from a driving lane and maintain vehicle stability.

Also, as per claim 4, Matsuno discloses the driving stability decision compensation section that compensates for the decision of the driving stability by changing a criterion, which is used to determine the driving stability, based on the controlled variable of the lane deviation prevention control, only when the lane deviation prevention section is executing the lane deviation prevention control (see at least columns 12-13, lines 44-28).

As per claim 5, Murakami discloses a vehicle dynamics control apparatus comprising: sensors that detect at least an actual yaw rate, a yaw angle, a host vehicle speed, and a steer angle (see at least columns 1-2, lines 29-27), an actuator that produces a yaw moment acting on the host vehicle (see at least columns 3-4, lines 65-37), a control unit configured to be electronically connected to the sensors and the actuator, for enabling vehicle dynamics control and lane deviation prevention control (see at least columns 8-9, lines 30-24). Murakami does not disclose desired yaw rate. However, Matsuno discloses a desired yaw rate calculation section that calculates a desired yaw rate based on at least the host vehicle speed and the steer angle (see at least columns 6-7, lines 53-7), a driving stability decision section that determines a driving stability including a vehicle driveability and vehicle stability, based on at least a yaw rate deviation between the actual yaw rate and a final desired yaw rate (see at least column 8, lines 23-62), a lane deviation prevention section that determines, based on at least the host vehicle speed and the yaw angle, a lane deviation tendency of the host vehicle from a driving lane, and executes the lane deviation prevention control by producing the yaw moment corresponding to the controlled variable of the lane deviation prevention control and acting in a direction that lane deviation is prevented (see at least columns 1-2, lines 46-2; and columns 8-9, lines 63-67), and a desired yaw rate compensation section that compensates for the desired yaw rate based on the controlled variable of the lane deviation prevention control to produce the final desired yaw rate (see at least column 18, lines 15-41). Murakami also does not disclose a yawing motion control. However, Leach et al. disclose a yawing motion control section that controls a yawing motion of the host vehicle by producing the yaw moment corresponding to a final desired yaw moment and acting in a direction that improves the driving stability when the driving stability is deteriorated,

the final desired yaw moment being determined to be equal to a controlled variable of the lane deviation prevention control when the vehicle dynamics control is inoperative and determined to be equal to a controlled variable of the vehicle dynamics control when the vehicle dynamics control is operative (see at least columns 11-13, lines 43-3; and columns 13-15, lines 34-11). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Murakami by combining a desired yaw rate calculation, and a yawing motion control for correcting the vehicle driving force and braking force distribution to vehicle wheels for improving a vehicle behavior and the running performance of the vehicle.

Also, as per claim 7, Matsuno discloses the lane deviation prevention section estimates a lane deviation estimate corresponding to a future lateral deviation of the host vehicle from a central axis of the driving lane, based on at least a host vehicle speed, a yaw angle of the host vehicle, a lateral deviation of the host vehicle, and a curvature of the driving lane, and estimates both of a lane deviation direction and a possibility of lane deviation, based on a comparison result of the lane deviation estimate and a predetermined lane deviation criterion, and determines that there is a possibility for the host vehicle to deviate from the driving lane when the lane deviation estimate exceeds the predetermined lane deviation criterion (see at least column 7, lines 8-63).

As per claim 8, Murakami also does not disclose a yawing motion control comprises a braking and driving force control. However, Matsuno discloses the yawing motion control comprises a braking and driving force control section being configured to be electronically connected to the actuator so that braking forces of each of road wheels are automatically controlled independently of each other regardless of a driver's braking action (see at least

column 2, lines 3-42; and columns 3-4, lines 48-35). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Murakami by combining yawing motion control comprises a braking and driving force control for appropriately apply a braking force and driving force to a selected wheel to avoid lane deviation and returning the vehicle to the correct direction.

Also, as per claim 9, Matsuno discloses the yawing motion control section is configured to be electronically connected to the actuator so that the yaw moment is produced in a direction that ensures easy change of vehicle heading when the driving stability decision section determines that the vehicle driveability is deteriorated, and that the yaw moment is produced in a direction that improves the vehicle stability when the driving stability decision section determines that the vehicle stability is deteriorated (see at least column 3, lines 6-47).

As per claim 10, Matsuno discloses the lane deviation prevention section estimates a lane deviation estimate corresponding to a future lateral deviation of the host vehicle from a central axis of the driving lane, based on at least a host vehicle speed, a yaw angle of the host vehicle with respect to a direction of the driving lane, a lateral deviation of the host vehicle from the central axis of the driving lane, and a curvature of the driving lane, and calculates a desired yaw moment corresponding to the controlled variable of the lane deviation prevention control, based on a deviation of the lane deviation estimate and a predetermined lane deviation criterion, and determines a braking force and a driving force of each of the road wheels, based on the desired yaw moment corresponding to the controlled variable of the lane deviation prevention control (see at least columns 6-7, lines 53-7; column 8, lines 23-62; columns 10-11, lines 11-40; and column 18, lines 14-41).

Claim 17 is a method claim corresponding to apparatus claim 1 above. Therefore, it is rejected for the same rationales set forth as above.

5. Claims 2-3, are rejected under 35 U.S.C.103(a) as being unpatentable over Murakami (6,702,717), Leach et al. (6,409,287), and Matsuno (6,442,469) as applied to claim 1 above, and further in view of Seizawa (5,615,117).

As per claim 2, Murakami, Leach et al., and Matsuno do not disclose a rate of change of the sideslip angle. However, Seizawa discloses the driving stability decision section that determines the driving stability based on at least one of a yaw rate deviation between an actual yaw rate resulting from the yaw moment acting on the host vehicle and a final desired yaw rate estimated based on a steer angle and a host vehicle speed, a sideslip angle of the host vehicle, and a rate of change of the sideslip angle (see at least column 2, lines 14-57). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teach of Murakami by combining determines the driving stability based on at least one of a rate of change of the sideslip angle for controlling wheel steering system which can improve the response property of a vehicle to an unexpected direction.

Also, as per claim 3, Seizawa discloses the driving stability decision section that determines the driving stability based on at least one of a yaw rate deviation between an actual yaw rate resulting from the yaw moment acting on the host vehicle and a final desired yaw rate estimated based on a steer angle and a host vehicle speed, a sideslip angle deviation between an actual sideslip angle of the host vehicle and a desired sideslip angle estimated based on the host vehicle speed, the steer angle, and a road surface friction coefficient, and a rate of change of the sideslip angle deviation (see at least columns 4-6, lines 44-54).

6. Claims 6,11-16,18-22, and 24 are allowable.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

. Uemura et al. (5,483,453)

. Harada (5,508,929)

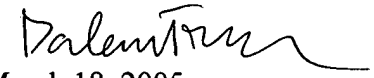
. Hiwatashi et al. (6,370,474)

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalena Tran whose telephone number is 703-308-8223. The examiner can normally be reached on M-F (7:30 AM-5:30 PM), off every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on 703-305-8233. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patent Examiner
Dalena Tran



March 18, 2005